

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) A method of monitoring an energy conversion appliance of a kind which involves a combustion process and which, in normal use, performs two or more operational events in a pre-determined sequence, each said event having a different acoustic signature, said method comprising:

providing a sound receiving transducer and positioning said transducer to receive sound signals emitted by the appliance during each of two or more operational events, ~~[[one]]~~ a first of said operational events comprising a fluid flow event which is related to the process of combustion and a second of said operational events comprising operation of a mechanical or electro-mechanical device;

providing output means associated with said sound receiving transducer, said output means being responsive to the ~~sound~~ sounds emitted by each of said first and second operational events ~~the appliance;~~ and

employing a monitoring means to compare each of said received sound signals with pre-established data.

2. (original) A method according to claim 1, wherein the monitoring means is operable to determine whether each acoustic signature indicative of an operational event has occurred at the normal position or one of a plurality of normal positions of that operational event in a normal operating sequence of the appliance.

3. (previously presented) A method according to claim 1, wherein the monitoring means is provided with and stores operating sequences indicative of correct functioning of the appliance and is operable to compare the order of occurrence of different acoustic signatures with the or each stored operating sequence.

4. (previously presented) A method according to claim 1, wherein the monitoring means is operable to determine whether an acoustic signature indicative of an operational event is concomitant with normal performance of that operational event.

5. (previously presented) A method according to claim 1, wherein the output means is responsive to occurrences of the sound emitted by the appliance, or by a single operational event, departing from said sound profile concomitant with proper functioning of the appliance or said operational event.

6. (original) A method according to claim 5, wherein the output means is responsive only if the emitted sound lies beyond a pre-established threshold level.

7. (previously presented) A method according to claim 1, wherein the appliance comprises a protective enclosure which protects the appliance from the surrounding environment and within which enclosure said two or more operational events occur, said method comprising providing said sound receiving transducer within said enclosure.

8. (previously presented) A method according to claim 1 and comprising employing the output means to transmit signals related to the acoustic signatures of events within the operating sequence of the appliance to remote data processing means.

9. (original) A method according to claim 8, wherein said transmission of signals from the output means occurs daily on a regular basis.

10. (previously presented) A method according to claim 1, wherein said operational event which comprises operation of a mechanical or electro-mechanical device comprises at least one of operation of a pump, operation of a relay, and flow of liquid or gas through a pipe.

11. (previously presented) A method according to claim 1, wherein said fluid flow event which is related to the process of combustion comprises the flow of gas or liquid fuel to or through a combustion zone or flow of combustion products from the combustion zone.

12. (previously presented) A method according to claim 1, wherein the monitoring means employs the signature of an operational event to establish the type of event which has occurred and then verifies that that operational event has occurred at a correct position in a normal operating sequence of the appliance.

13. (previously presented) A method according to claim 1, wherein the output means either substantially directly, or substantially indirectly via remote data processing means, causes operation of an alarm when the sound emitted by the appliance departs from a sound profile concomitant with proper functioning of the appliance.

14. (original) A method according to claim 13, wherein the alarm is an audible alarm in the vicinity of the appliance.

15. (original) A method according to claim 13, wherein an alarm is actuated at a position remote from the appliance.

16. (previously presented) A method according to claim 1, wherein the monitoring means is operable to cause shutting down of the appliance in the event of the acoustic signature of an operational event departing by a pre-determined amount from an acoustic signature concomitant with proper functioning of that operational event.

17. (previously presented) A method according to claim 1, and comprising providing within an enclosure a plurality of sound receiving transducers.

18. (original) A method according to claim 17, wherein one transducer is selected to have a frequency response different from that of the or each other transducer.

19. (previously presented) A method according to claim 1, and providing to the monitoring means signals from transducers of a non-acoustic type.

20. (cancelled)

21. (original) A diagnostic tool for an energy conversion appliance of a kind which, in normal use, performs two or more operational events in a pre-determined sequence and each

said event having a different acoustic signature, said diagnostic tool being adapted for performing a method in accordance with claim 1.

22. (currently amended) A diagnostic tool for an energy conversion appliance of a kind which involves a combustion process and which, in normal use, performs two or more operational events in a pre-determined sequence and each said event having a different acoustic signature, ~~[[one]]~~ a first of said operational events comprising a fluid flow event which is related to the process of combustion and a second of said operational events comprising operation of a mechanical or electro-mechanical device, said diagnostic tool comprising a sound receiving transducer coupled to output and monitoring means to identify, discriminate and log the acoustic signatures of each of said first and second operational events within the operating sequence of the appliance, said monitoring means being operable to compare each of said received acoustic signatures with pre-established data.

23. (original) A diagnostic tool according to claim 22, wherein means is provided to transmit to remote data processing means signals related to the acoustic signatures of operating events within the operating sequence of the appliance.

24. (previously presented) A diagnostic tool according to claim 22, wherein the energy conversion appliance comprises a protective enclosure within which said operational events occur, the or each sound receiving transducer being provided within said enclosure.

25. (previously presented) A diagnostic tool according to claim 22 and comprising at least two sound receiving transducers at least one of which has a frequency response different from that of the or each other sound receiving transducer.

26. (previously presented) A diagnostic tool according to claim 22, wherein said sound receiving transducer is receptive to an acoustic signature related to the process of combustion and which comprises the flow of gas or liquid fuel to or through a combustion zone or flow of combustion products from the combustion zone.

27. (previously presented) A diagnostic tool according to claim 22, wherein said sound receiving transducer is receptive to the acoustic signature associated with an operational event which comprises at least one of operation of a pump, operation of a relay, and flow of a liquid or gas through a pipe.

28. (previously presented) A diagnostic tool according to claim 22, wherein the output or monitoring means has coupled thereto a transducer of a kind responsive to signals other than sound.

29. (cancelled)

30. (withdrawn, currently amended) A method of monitoring an energy conversion appliance of a kind which in normal use, performs two or more operational events in a pre-determined sequence, each said event having a different acoustic signature, said method comprising:

providing a sound receiving transducer and positioning said transducer to receive sound signals emitted by the appliance during each of two or more operational events;

providing output means associated with said sound receiving transducer, said output means being responsive to the sound emitted by each of said two or more operational events the ~~appliance~~; and

employing a monitoring means to compare each of said received sound signals with pre-established data, said monitoring means being provided with means to store data of a plurality of operating sequences which are each indicative of correct functioning of the appliance and said monitoring means being operable to compare the order of occurrence of monitored acoustic



signatures with said stored operating sequences, at least some of said operational events occurring in one operating sequence being events which occur in one or more other sequences of the plurality of operating sequences for which the monitoring means stores data.

31. (withdrawn, currently amended) A method of monitoring an energy conversion appliance of a kind which in normal use, performs two or more operational events in a pre-determined sequence, each said event having a different acoustic signature, said method comprising:

providing a sound receiving transducer and positioning said transducer to receive sound signals emitted by the appliance during each of two or more operational events;

providing output means associated with said sound receiving transducer, said output means being responsive to the sound emitted by each of said two or more operational events ~~the~~ ~~appliance~~; and

employing a monitoring means to compare each of said received sound signals with pre-established data, said monitoring means comprising a data store for information related to time intervals which are indicative of correct functioning of the appliance, and said monitoring means being operable to compare monitored time intervals with said stored information of time intervals.